

In the Claims:

1 1. (Previously presented) A method of fabricating a
2 semiconductor device by employing ion implantation to
3 provide a SiC semiconductor substrate at a surface thereof
4 with a region having dopant introduced therein, comprising
5 the steps of: providing said semiconductor substrate at
6 least at a first region of a surface thereof with a mask
7 layer including a polyimide resin film; and implanting
8 dopant ions to an implantation depth into said
9 semiconductor substrate at a second region of said surface
10 of said semiconductor substrate free of said polyimide
11 resin film; wherein said polyimide resin film has a
12 thickness of at least twice said implantation depth.

Claims 2 to 5 (Canceled).

1 6. (Previously presented) The method of claim 1, wherein said
2 semiconductor substrate is heated to at least 300°C and
3 said dopant ions are implanted.

1 7. (Previously presented) The method of claim 1, wherein said
2 semiconductor substrate is heated to at least 500°C and
3 said dopant ions are implanted.

1 8. (Previously presented) The method of claim 1, wherein said
2 polyimide resin film is formed of photosensitive polyimide
3 resin.

Claim 9 (Canceled).

1 10. (Previously presented) The method of claim 1, wherein a
2 thin metal film is further interposed between said
3 polyimide resin film and said semiconductor substrate.

1 11. (Previously presented) The method of claim 1, wherein a
2 thin film formed of SiO_2 is further interposed between said
3 polyimide resin film and said semiconductor substrate.

Claims 12 to 24 (Canceled).

1 25. (Previously presented) The method of claim 1, wherein said
2 mask layer is deposited on said semiconductor substrate at
3 said first region to be undoped with said dopant ions.

1 26. (Previously presented) The method of claim 1, wherein said
2 dopant ions are implanted into said second region which is
3 not masked by said mask layer.

1 27. (Previously presented) A method of preparing a doped
2 semiconductor substrate, comprising the steps:
3 a) providing a semiconductor substrate comprising SiC ;
4 b) providing a mask layer including a polyimide resin
5 film that consists of a photosensitive polyimide resin
6 on a first region of a surface of said substrate, by
7 applying said polyimide resin film on said first

region and a second region of said surface, then exposing said polyimide resin film to light at said first region, and then removing said polyimide resin film at said second region, wherein said step b) does not involve photolithography employing a photoresist; heating said substrate to at least 300°C; and while said substrate is at least 300°C, implanting, by ion implantation, dopant ions into said substrate through said second region of said surface to form in said substrate a doped region that is doped with said dopant ions;

wherein said method does not involve chemical vapor deposition and does not involve dry etching.

Claim 28 (Cancelled).

29. (Previously presented) The method according to claim 27, further comprising, after said step d), a step of removing said polyimide resin film by wet etching using hydrofluoric acid.

30. (Previously presented) A method of preparing a doped semiconductor substrate, comprising the steps:

- a) providing a semiconductor substrate comprising SiC;
- b) providing a mask layer including a polyimide resin film on a first region of a surface of said substrate;
- c) heating said substrate to at least 300°C; and

7 d) while said substrate is at least 300°C, implanting, by
8 ion implantation, dopant ions into said substrate
9 through a second region of said surface to form in
10 said substrate a doped region that is doped with said
11 dopant ions;

12 wherein said polyimide resin film has a thickness of at
13 least twice a depth of said doped region.

1 31. (Currently amended) The method according to claim 30,
2 A method of preparing a doped semiconductor substrate,
3 comprising the steps:

4 a) providing a semiconductor substrate comprising SiC;
5 b) providing a mask layer including a polyimide resin
6 film on a first region of a surface of said substrate;
7 c) heating said substrate to at least 300°C, and
8 d) while said substrate is at least 300°C, implanting, by
9 ion implantation, dopant ions into said substrate
10 through a second region of said surface to form in
11 said substrate a doped region that is doped with said
12 dopant ions;

13 wherein said step b) further comprises forming said mask
14 layer to include a metal film interposed between said
15 polyimide resin film and said substrate.

1 32. (Currently amended) The method according to claim 30,
2 A method of preparing a doped semiconductor substrate,
3 comprising the steps:

4 a) providing a semiconductor substrate comprising SiC;

5 b) providing a mask layer including a polyimide resin
6 film on a first region of a surface of said substrate;
7 c) heating said substrate to at least 300°C; and
8 d) while said substrate is at least 300°C, implanting, by
9 ion implantation, dopant ions into said substrate
10 through a second region of said surface to form in
11 said substrate a doped region that is doped with said
12 dopant ions;

13 wherein said step b) further comprises forming said mask
14 layer to include a SiO₂ film interposed between said
15 polyimide resin film and said substrate.

1 33. (New) The method according to claim 27, wherein said
2 step b) further comprises forming said mask layer to
3 include a metal film interposed between said polyimide
4 resin film and said substrate.

1 34. (New) The method according to claim 27, wherein said
2 step b) further comprises forming said mask layer to
3 include a SiO₂ film interposed between said polyimide resin
4 film and said substrate.

[RESPONSE CONTINUES ON NEXT PAGE]